

Part 3 -- Remarks

This Amendment and Response is responsive to the office action mailed August 25, 2004. A Petition for a One Month Extension of Time and the fee therefor accompanies this Amendment and Response, thereby extending the time for response to December 27, 2004, since December 25 is a holiday and a Saturday.

In the August 25 office action, claims 1-43 were rejected under 35 USC 101 as allegedly directed to non-statutory subject matter, and under 35 USC 102(b) as allegedly anticipated by U.S. Patent No. 5,163,737 to Navach et al.

Reconsideration of these rejections is respectfully requested, with respect to the pending claims 1, 3, 4, 6-22, 24-27 and 29-52.

Specification Amendments

The paragraphs of the specification noted in Part 1 have been amended to correct typographical and form errors, and to otherwise improve their form. No new matter has been added.

Non-Statutory Rejection

This rejection appears to be based on the assertion that any non-statutory subject matter included within a claim makes the entire claim non-statutory. If so, the rejection is erroneous and should be withdrawn.

Initially, it is important to note that the claims are directed to statutory subject matter: the support contour recited in claim 1 and its dependent claims, the method of configuring a support contour as recited in claim 22 and its dependent claims, and the method of supporting a person as recited in claim 31 and its dependent claims. Including alleged non-statutory subject matter in combination with this statutory subject matter does not make the entire claim non-statutory.

As has been recognized by the courts and the PTO in the field of mathematical algorithms, the mathematical algorithm itself may be non-statutory subject matter, but the inclusion of that algorithm within a claim which is otherwise directed toward

statutory subject matter does not defeat the statutory basis for that claim. See MPEP 2106 and the cases cited therein.

Moreover, the amended claims make it clear that the person is not part of the claimed subject matter. The claims recite structure and methodology relative to the anatomical characteristics of the person, in regard to "when the person is seated on the support contour" (or recitations to a similar effect). It is appropriate to define characteristics of an invention in relation to an object with which the invention will be used or interact, such a claim does not make the object an element in a claimed combination. Indeed, the characteristics of a support contour for supporting a person in a seated position should be defined with respect to characteristics of the person, because the benefits of the support contour are derived from interaction with the person.

Because the inclusion of non-statutory subject matter in a claim which is otherwise statutory does not make the entire claim non-statutory, and because the claims now pending in this application do not recite the person in combination with the apparatus and methods of recited in those claims, the rejection under Section 101 should be withdrawn.

Claim Amendments

Subject matter from the canceled dependent claims has been incorporated into their amended independent claims in the manner set forth. Other amendments have been made to improve the form and clarity of the pending claims. New claim 45 is a combination of original claims 9 and 10 and the subject matter at page 17, lines 12-14. New claim 46 is a combination of the subject matter of original claim 12 and the subject matter at page 14, line 31-page 15, line 3 and page 16, lines 19-27. New claims 49-52 incorporates subject matter from new claims 45 and 46. The other new claims incorporate subject matter from the original claims. No new matter has been added.

Anticipation Rejection

Reconsideration of the anticipation rejection based on Navach is respectfully requested.

As is more specifically recited in the independent claims 1, 22 and 31, the invention involves substantially offloading support pressure on the skin adjacent to the ischial tuberosities, the greater trochanters and the coccyx and sacrum of a person when the person is seated on a support contour. To substantially offload the support pressure at these bony prominences, substantially the entire force for supporting the person is transferred to the skin and broad tissue masses on the opposite lateral posterior buttocks and the proximal thighs. As a consequence, offloading the support forces which are normally responsible for ulcers has the beneficial effect of reducing the incidence of pressure sores and ulcers in these areas. No bony prominences are present at the lateral posterior buttocks and the proximal thighs, so the broad tissue masses at those locations are able to accept substantially the entire force for supporting the person without risk of ulceration.

The combined effect of the relief areas and the support areas, also has the capability of offloading and eliminating substantial support pressure on the bony prominences during a range of normal movement of a person when seated, as would occur during manipulation of a wheelchair, for example. Thus, the advantages of the present invention are not necessarily achieved only when the person remains in a static position.

Transferring the support force to the posterior lateral buttocks and the proximal thighs encourages proper postural support. The support forces applied to the posterior lateral buttocks and the support forces applied through the hip joints from the thigh leg bones, which pivot in a lever-like manner on the fulcrum-like support area beneath the proximal thighs, induces an upward force on the pelvic area at the posterior lateral buttocks and at the anterior lateral location of the hip joints, which encourages upright posture and provides forward and backward and lateral side to side stability. Support forces from the posterior lateral buttocks cooperate with the lifting force induced at the

hip joints to prevent the pelvic area from rotating or slouching. Proper postural support is extremely important for many individuals confined to a wheelchair, because they may have physical deformities or lack the physical strength to achieve proper posture without external assistance. The support areas of the present invention provide a level of external assistance in achieving and maintaining proper posture.

The substantial improvements available from this inventive concept are described throughout the application, as for example at page 1, lines 16-23; page 5, line 24 to page 7, line 9; pages 15-17; and page 18, line 28 to page 20, line 19, among other places. The more detailed characteristics of the relief areas for the bony prominences (ischial tuberosities, the greater trochanters and the coccyx and sacrum), and the more detailed characteristics of the support areas for the broad tissue masses at the lateral posterior buttocks and the proximal thighs, are discussed in conjunction with Figs. 2-7 at pages 10-18 of the application.

The support theory discussed in Navach involves "clasping" the buttocks and the thighs and "reducing" the pressure in recesses to a "limited value." See column 1, lines 47-51. Navach provides "softer pressure" in selected areas (column 3, lines 50-54) to avoid extrusion of tissue into the recesses, yet limit the pressure so the ulceration in the area is avoided. See column 4, lines 50-59.

Navach certainly does not provide a support area for transferring support force to the proximal thighs, as is recited in independent claims 1, 22 and 31. The proximal thighs are those portions which are closet to the hip joint than to the knee joint. The support area beneath one proximal thigh is shown by reference number 66 in Fig. 6 in the application. Fig. 6 illustrates that the proximal thigh support area is more closely spaced toward the greater trochanters 38 at the hip joint than it is spaced toward the knee joint 67. In contrast, Fig. 2 of Navach shows a relief 36 in the same area where the present invention provides the proximal thigh support area. Navach's relief areas reduce the local surface pressure at these locations. See column 4, lines 64-68. The relief area 36 in Navach is described as providing relief for sciatica nerve, thereby

allowing more weight to be distributed to the thighs. See column 1, line 68 to column 2, line 4; and column 4, lines 64-68. Thus sciatica nerve is located at approximately the position of the posterior thigh support areas of the present invention, thereby confirming that the relief area in this location in Navach cannot provide the support called for in the pending claims.

Fig. 2 in Navach shows the highest point 22 beneath the anterior thigh leg bones adjacent to the knee joint, rather than at the posterior thigh as recited in the present claims. Navach's sloping curvature from the anterior thigh at the knee joint backward and downward apparently has the purpose of distributing more weight to the thighs and inhibiting forward motion of the buttocks. See column 2, lines 2-5.

Not only does the greater height and support at the anterior thighs contrast to the support at the posterior thighs recited in the pending claims, but the greater height beneath the anterior thighs in Navach will not obtain the lever-like mechanical advantage of using the weight of the distal legs to create and increase the amount of upward support force applied on the hip joints, as involved in pending claims 9-11, 14, 18, 19, 26, 27, 29, 35, 36, 44 and 45, among others. The mechanical advantage of increasing the support force from the weight of the distal legs at the support areas beneath the proximal thighs is described at page 17, lines 2-21 of the application. Navach does not anticipate these concepts.

Neither does Navach appear to discuss maintaining pressure relief during ranges of natural motion, as would occur when a user operates a wheelchair. This concept is discussed in many of the pending claims, including claims 6-8, 12, 13, 15, 24, 25, and 32-34, among others.

Navach is not describe the concept of applying the forward an upward support force from the posterior lateral buttocks to counteract the pivoting tendency of the pelvic area of the person, resulting from the upward force at the hip joints, as recited in many of the new claims.

Navach does not describe concept of positioning the support areas relatively more toward the expected representation of the anatomical shape of pelvic area of the person when the person is seated on the support contour, and the relief areas relatively more away from the expected representation of the anatomical shape, as recited in independent claim and in other claims.

Navach does not disclose forming a support structure of a cushion from adhered-together plastic beads, as recited in claims 38-43. The advantage of using adhered-together plastic beads is involves air permeability of the support structure, which is instrumental in evaporating moisture that could foster the development of pressure sores unless removed. The use of the adhered-together plastic beads and the advantages obtained are described in the application at page 10, lines 20-25 and in the concurrently-filed U.S. patent application Serial No. 10/628,858, which has been incorporated herein by reference. In contrast, Navach apparently uses a partially closed cell foam for a top part of his cushion. See column 3, lines 39-40.

In summary, Navach fails to achieve the presently claimed features of substantially offloading or eliminating the support pressure from the bony prominences while transferring substantially the entire support force to the lateral posterior buttocks and the posterior thighs. The present invention makes use of the unique interaction and combination of the relief areas and the support areas. Navach cannot achieve the applicant's invention without providing a support area at the posterior thigh, which he explicitly does not do by providing a relief area at that location instead, among the other reasons recited above. Accordingly, it is believed that the anticipation rejection based on Navach is erroneous and should be withdrawn.

PCT Examination Report

Cited in a Third Supplemental Information Disclosure Statement filed herewith are the examination report, written opinion and the references cited by the European Patent Office acting as the examining authority for a PCT application corresponding in part to the present application. The PCT application is a combination of the present

application and U.S. patent application Serial No. 10/766,623, which was filed as a continuation in part of the present application. The claims of the PCT application do not correspond to the claims in the present application. A copy of the PCT claims is attached to the examination report and written opinion.

U.S. patent 4,912,788 to Lonardo cited in the PCT examination report describes a seat cushion which uses cushion areas that correspond to and receive large muscle masses of the person's buttocks and thighs to distribute the person's weight over the large muscle masses, while simultaneously receiving and suspending the prominences to minimize pressure on those prominences. The cushion areas are created by the amount of stuffing in compartments of the seat cushion, and recesses are created for minimizing pressure. Like Navach, Lonardo fails to describe providing a support area at the proximal thigh. Instead, Lonardo appears to distribute the force over the entire thigh as shown in Figs. 6 and 7. Certainly nothing in Lonardo describes applying the force only at the proximal thigh, and nothing describes the mechanical-advantage, fulcrum-like effect from supporting the thigh at a proximal location. Furthermore, it appears that posterior lateral support is not provided or is not regarded as important in Lonardo, because it is noted that the lumbar section of the seat cushion is optional. See column 2, lines 38-40. Certainly Lonardo does not discuss the counterbalancing effect of the posterior lateral product support and the lifting support at the hip joints are created by the proximal thigh support to achieve proper posture.

Published U.S. patent application US 2002/0014794 utilizes a support concept of distributing uniform pressure on the body. See paragraph [0013]. U.S. patent 5,845,352 uses an air cushion to provide force equalization beneath the ischial tuberosities. See column 2, lines 38-39. U.S. patent 6,161,238 has previously been cited in this prosecution, and it appears to be similar in the sense of the equalizing suspension forces to better assume the shape of the hips and its ischia. Column 2, lines 57-59. U.S. patent 6,161,238 also discusses what it regards as a prior art concept of loading the thighs and reducing the suspension forces on the ischia and

trochanters, in a manner which serves as a fulcrum so the weight of the legs lifts the buttocks. See column 2, lines 51-63.

Request for Interview

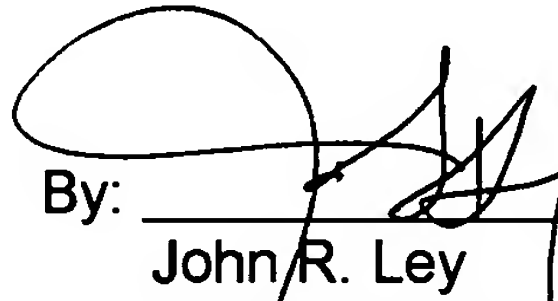
If this application is not regarded as allowable in view of this Amendment and Response, the undersigned requests a telephone interview with the Examiner to discuss those reasons. The Examiner is requested to contact the undersigned to set a time for any such interview.

Conclusion

As a result of the present amendments and remarks, it is believed that the pending claims are in condition for allowance. Allowance is respectfully requested.

Respectfully submitted,

Date: 12/27/04

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